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Breaking the math barrier

By Bilqees Patel



Why do we gear boys towards mathematics when girls can be as good, if not better, at it, writes **Bilqees Patel**

Different kinds of roles and responsibilities have been assigned to girls and boys. This disparity is highly prominent in the opportunities and resources available to them one example of which is the number of institutions available for girls and boys. The total number of schools available for girls in the public sector is 55,428 compared to the 88,822 institutions for boys (Ministry of Education, 2005-06). The total number of girls enrolled in all the sectors (public and private) is 14,150,725 whereas the total enrolment of boys is 18, 393,998. This low enrolment is due to the perceptions and practices of the elders of society; which includes parents and teachers.

Parents are the first teachers and role models for their children. They play a very important role in the gender identity development of their children as well. In their children's early stages, their biased perceptions can be reflected in their selection of toys and games. For example: they select blocks, cars, toy guns for their boys whereas they choose dolls and clothes are their selection for their daughters. This practice remains throughout their academic career particularly when it comes to choosing subjects which will help them determine their careers. Parents prefer girls to pursue careers related to social sciences such as teaching, fashion designing where they want boys to pursue hard sciences like mathematics and physics. Several studies have shown that most parents think that mathematics is more suitable and useful for boys. These acts develop more confidence and ownership for the mathematics in males as compared to females. As a result, more males have career in mathematics as compared to females (Walker, 1996).

Teachers' attitudes toward students' performance in mathematics parallel those of the parents. This too impacts a student's interest in different subject. The learning opportunity provided by the teacher in a mathematics classroom is highly influenced by the biased perceptions of the teacher. As Walle (2003) stated, "Teachers may not consciously seek to stereotype students by gender, however, the gender based biases of our society often affects teacher's interaction with the students." Teachers, especially in

mixed classrooms, feels that boys are more inclined toward mathematics and have more talent compared to girls. These perceptions can clearly be seen during classroom interaction where boys are given more opportunities to participate and interact as compared to girls (Charlene & James, 1995). This leads to further reduction in the interest of girls and causes alienation for this subject.

In any school system of Pakistan, it is not just teachers that perpetuate gender discriminate. One such resource which has a huge impact on an interest of the students towards a subject is the mathematics textbook. The Sindh Textbook Boards' mathematics books are filled with examples and experiences of males which present this subject as a masculine one. As Walkerdine (1998) stated that mathematics curricula emphasises experiences, concerns and interest associated with masculinity rather than femininity. Some examples are: A father is four times as old as his son and sum of their ages is 50 years, find their ages (Class 7th Mathematics Textbook). Or a boy spends Rs. 3.62 everyday. How much does he spend in one day? (Class 6th Mathematics Textbook).

These texts unconsciously develop the lack of interest for mathematics amongst girls.

There is plenty of literature that points to girls believing that mathematics is a boring and least interesting subject. Previous research (in the western world) has identified that "males believe that mathematics was and would be more useful to them; however, females found with some reverse opinions" (Fennema, 2000). Moreover, studies have also shown that females take mathematics as a stepping stone for another place, where mathematics will seldom play a major role (Charlene & James, 1995, p.25). In other words, mathematics can be taken as a part of a process to reach to certain end but rarely thought of it as an end.

There is a need to make a conscious effort in order to make parents aware of their hidden biases. School can make conscious efforts to help parents to neutralise their behaviour and have the same expectations from their daughter and son. This will help girls to get encouragement from parents and to work hard in order to increase their inclination towards the subject. Moreover, by increasing a teacher's awareness of her or his own biases and actions in the classroom and by working to increase a teacher's understanding of varying world views held by different groups, the classroom can become a more inviting place for all people including girls as well (Hill, 1998). A heavy responsibility also lays on the shoulder of textbooks developers. They should try to make textbooks of mathematics without high gender biased representations. The representations, symbols, pictures and words should not be male-driven. Only then will girls be able to be open to fields related to mathematics.